A review of oesophageal manometry testing in a district general hospital

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Although several modalities are available to investigate oesophageal motility disorders, manometry is the gold standard. The procedure is increasingly available in district general hospitals but the clinical utility of this investigation in this setting remains unclear. The aim of this study was to evaluate the use and outcome of oesophageal manometry in a district general hospital. Data on 100 consecutive oesophageal manometry procedures were analysed, taking into account the referral pattern, indications, and results. The indications were gastro-oesophageal reflux disease (preoperative assessment before fundoplication) (58), dysphagia (28), chest pain (12), and epigastric pain (2). Diagnoses were made using predefined standard criteria and were as follows: normal (41), non-specific motility disorder (NSMD) (38), achalasia (15), diffuse oesophageal spasm (4), and scleroderma (2). Of the 58 patients who had undergone manometry as a preoperative assessment of oesophageal motility, 27 (47%) were abnormal. Twenty five (43%) had NSMD and two (3%) had achalasia. Forty eight of these preoperative cases were combined with 24 hour pH recording, which confirmed acid reflux in 35 (73%). The experience reported here reflects the published evidence that the use of manometry is changing. It is now more commonly used for assessment before antireflux surgery and for dysphagia, and the use in the assessment of chest pain is declining. The findings confirm the importance of eliminating achalasia before inappropriate antireflux surgery.

Box 1: Normal values used to categorise manometric features

Lower oesophageal sphincter station analysis (wet swallows):
- Resting pressure: 16.6–35.4 mm Hg.

Oesophageal body motility analysis (wet swallows):
- Peristaltic performance as % of normal swallows: >90.
- Mean amplitude (distal): 64–154 mm Hg.
- Mean amplitude (proximal): 33–91 mm Hg.
- Mean duration (distal): 2.9–5.1 sec.
- Mean duration (proximal): 2.0–3.6 sec.

Abbreviations: GORD, gastro-oesophageal reflux disease; LOS, lower oesophageal sphincter; NCCP, non-cardiac chest pain; NSMD, non-specific motility disorder
also underwent 24 hour pH recording, which confirmed acid reflux in 35 (73%). Ten patients with non-cardiac chest pain (NCCP) had manometry and 24 hour pH study combined, out of which eight (80%) had reflux and the remaining two (20%) were normal. Two patients with epigastric pain had normal manometric findings and were shown to have gallstones on ultrasound.

DISCUSSION
There is little doubt as to the usefulness of manometry in diagnosing oesophageal motility disorders. Because of the low prevalence of these disorders, manometry has tended to remain in tertiary gastroenterology units even in developed countries. The American Gastroenterology Association1 and the British Society of Gastroenterology7 have published guidelines (box 3), which define the indications and clinical use of manometry, and the technique is becoming more widely available. In this study we have reviewed the clinical utility of oesophageal motility testing in a district general hospital setting. Our results are comparable to the North American study by Alrakawi and Clouse who reviewed 1162 patients seen over a 10 year period.7 The most common indication for manometry in our study was assessment of oesophageal motility in patients with GORD before an antireflux procedure. All these patients were diagnosed to have GORD based on clinical, endoscopic, and 24 hour pH studies. There have been conflicting reports in the literature on the value of preoperative motility testing.11–13 In spite of these controversies, some centres are now advocating tailoring the antireflux procedure to the preoperative motility pattern.14 This is based on the knowledge that distal oesophageal body motility can be affected by GORD,15 and more severe and progressive reflux seems to result in greater dysfunction of oesophageal motility with an end result of hyperperistalsis.16 It is therefore thought justifiable to evaluate the propulsive force of the oesophageal body by manometry to determine if it has sufficient power to propel a bolus of food through a newly constructed LOS.

In our study, 43% of patients who underwent preoperative motility testing were diagnosed to have non-specific oesophageal motility disorder (NSMD) and this did not alter the treatment decision to operate. A diagnosis of achalasia was made in 3% of the patients, which radically altered the management. Although these patients gave a history suggestive of GORD, there have been reports of patients suffering from GORD subsequently developing achalasia.12–15 A few of these patients have had mild and intermittent dysphagia accompanying reflux symptoms. The exact pathophysiology of this association is not clearly understood. It has been suggested that the autonomic damage eventually leading to achalasia may in its initial phases cause gastro-oesophageal reflux. Although this is uncommon, it is clearly important to exclude achalasia especially in patients with dysphagic symptoms before subjecting them to surgery.

<table>
<thead>
<tr>
<th>Table 1: Indications and diagnosis in patients studied</th>
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<tbody>
<tr>
<td><strong>Indication</strong></td>
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<tr>
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</tr>
<tr>
<td>Dysphagia (n=28)</td>
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<tr>
<td>GORD (n=58)</td>
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<tr>
<td>NCCP (n=12)</td>
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<tr>
<td>Epigastric pain (n=2)</td>
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<tr>
<td>Total 100</td>
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GORD, gastro-oesophageal reflux disease; NCCP, non-cardiac chest pain; NSMD, non-specific oesophageal motility disorder; DOS, diffuse oesophageal spasm.

Box 2: Manometric classification of oesophageal motility abnormalities (adapted from Castell and Castell11)

- **Achalasia**
  - Absent distal peristalsis. *
  - Raised resting LOS pressure (>45 mm Hg). †
  - Incomplete LOS relaxation (residual pressure >8 mm Hg). †
  - Raised baseline oesophageal pressure. †

- **Diffuse oesophageal spasm**
  - Simultaneous contractions (>20% wet swallows). *
  - Intermittent normal peristalsis. *
  - Repetitive contraction (>3 peaks). †
  - Prolonged duration contractions (>6 sec). †
  - Retrograde contractions. †
  - Isolated incomplete LOS relaxation (>8 mm Hg). †

- **Nutcracker oesophagus**
  - Increased distal peristaltic amplitude (>180 mm Hg). *
  - Increased distal peristaltic duration (>6 sec). †

- **Hypertensive LOS**
  - Resting LOS pressure >45 mm Hg. *
  - Incomplete LOS relaxation (residual pressure >8 mm Hg). †

- **Hypotensive LOS**
  - Resting LOS pressure <30 mm Hg. †

- **Hypotensive LOS**
  - Resting LOS pressure <10 mm Hg. †

- **Scleroderma oesophagus**
  - Low LOS pressure. *
  - Weak or absent distal peristalsis. *
  - Normal upper oesophagus and upper oesophageal sphincter. *

- **Non-specific oesophageal motility disorder**
  - Intermittent peristalsis with frequent non-transmitted contractions. †
  - Triple peaked contractions. †
  - Retrograde contractions. †
  - Low amplitude contractions (<30 mm Hg). †
  - Isolated, incomplete LOS relaxation (residual pressure >8 mm Hg). †

- **Required for diagnosis; †may be seen, not required; ‡either or all may be seen.**
Learning points

- Clinical indications for oesophageal manometry are changing.
- It is more commonly used in the preoperative assessment of motility before antireflux surgery.
- Its use in preoperative assessment is controversial, nevertheless, it is justifiable to exclude significant dysmotility.
- It is of value in evaluating dysphagia when obstructive causes are excluded.
- It is of limited value in the assessment of non-cardiac chest pain.

Non-cardiac chest pain was an indication for motility testing in only 12% of our patients, and 58% was normal. The remainder had NSMD. It is difficult to know how to interpret these results, as patients are often asymptomatic during the procedure. Provocative studies and ambulatory monitoring can improve the yield, but we do not offer these techniques. However, a recent study suggests that findings consistent with diffuse oesophageal spasm on stationary manometry correlates poorly with abnormal motility associated with pain events during ambulatory pressure monitoring. Reflux is the most likely abnormality related to pain in patients with unexplained chest pain. In our study the majority (80%) of patients with NCCP had confirmed reflux on 24 hour pH study, and this is likely to be a more rewarding investigation in the evaluation of these patients.

In conclusion, our experience reflects the published evidence that the use of manometry is changing. It is now more commonly used for assessment before antireflux surgery and for dysphagia, and the use in the assessment of chest pain is declining. It has poor clinical value in NCCP other than to reassure the patient. Our findings confirm the importance of eliminating achalasia before inappropriate antireflux surgery.

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